

[0041] As shown in FIG. 4, the input apparatus 1 includes a control unit 21, and the display panel 3 and the flat input device 4 are connected to and controlled by the control unit 21. In addition, a transmitting unit 22, a receiving unit 23, and a memory unit 24 are also connected to the control unit 21. The transmitting unit 22 and the receiving unit 23 are used for communicating sound signals and data signals with the external environment, and the memory unit 24 is used for storing phone-number data, various set data, and data to be displayed on the display panel 3, etc.

[0042] The control unit 21 is able to set two different types of input modes: a predetermined input mode (an indication-mark input mode) which is selected when input positions shown by the indication marks 8 are pushed individually by a finger or the like and the other input mode, which is a coordinate input mode. When, for example, one of the indication marks 8 is pushed for a predetermined time interval, it is determined that the predetermined input mode (indication-mark input mode) is set. In this mode, an input signal corresponding to an item represented by the indication mark 8 is generated, and an operation signal corresponding to a character, a number, or a symbol is generated on the basis of the input signal.

[0043] In addition, when the position at which a finger or the like touches the flat input device 4 is moved before the predetermined time interval elapses, it is determined that the other input mode (coordinate input mode) is set. In this case, coordinate data corresponding to the movement of the finger on the surface of the flat input device 4 is generated, and an operation signal is generated on the basis of the coordinate data.

[0044] When the predetermined input mode is set, numbers, etc., are shown on the display panel 3, as shown in FIG. 6A. FIG. 6A shows a state in which a finger or the like has touched the indication mark 8 representing the number '6', so that a display 3a showing the number '6' appears on the display panel 3.

[0045] When another of the input modes is set, and a finger or the like that is touching the flat input device 4 traces a pattern, a display 3b showing a locus of the pattern that was traced by the finger or the like appears on the display panel 3, as shown in FIG. 6B. In addition, when, for example, it is recognized that the locus represents a certain character (for example, the letter 'Z'), that character (Z) appears on the display panel 3.

[0046] Alternatively, when the operator starts to move his or her finger on the flat input device 4, the display panel 3 may show a menu from which the operator is able to select or a cursor which can be moved by the operator. For example, when a homepage (a web page) of the Internet is displayed on the display panel 3, a cursor may be shown on the display panel 3 such that it can be moved freely in various directions in an X-Y plane in accordance with an input operation on the flat input device 4. When the cursor is moved to a position of an item to be selected from the menu, a determination operation is subsequently carried out. The determination operation may be executed by, for example, softly hitting (tapping) the surface of the flat input device 4 or by using an operating member provided on the housing 2 separately from the flat input device 4.

[0047] The operation of pushing one of the indication marks 8 and the above-described tapping operation are

distinguished from each other on the basis of a difference between the states of input detection of the flat input device 4. For example, when the flat input device 4 is of the capacitive type, the pushing operation and the tapping operation are distinguished on the basis of a difference between changes in the capacity per unit of time. In addition, when the flat input device 4 is of the pressure-sensitive type, the pushing operation and the tapping operation are distinguished on the basis of a difference between changes in the resistance per unit of time.

[0048] In the input apparatus 1, the control unit 21 switches between the above-described predetermined input mode (indication-mark input mode) and the other input mode (coordinate input mode) by using software programs. Accordingly, input modes are automatically switched and the display panel 3 shows a display corresponding to the selected input mode.

[0049] A process performed at the control unit 21 of the input apparatus 1 will be described below.

[0050] As shown in FIG. 5, at Step 1 (ST1), it is determined whether or not the predetermined input mode, that is, the input mode corresponding to the indication marks 8, is set. When it is determined that the predetermined input mode is set, that is, when the result at ST1 is Yes, the process proceeds to ST2 and the display panel 3 shows a screen corresponding to the items represented by the indication marks 8. Then, the process proceeds to ST3, and when one of the indication marks 8 of the flat input device 4 is pushed, an input signal corresponding to the item represented by the pushed indication mark 8 is generated. Then, at ST4, an operation signal is generated on the basis of the input signal and the display panel 3 shows an updated screen in which the generated operation signal is reflected.

[0051] When the control unit 21 determines that another of the input modes is set, that is, when the result at ST1 is No, the process proceeds to ST5 and the display panel 3 shows a screen corresponding to the coordinate data, for example, a display including a selection menu or a cursor. Then, the process proceeds to ST6, and when the flat input device 4 is operated, an input signal which is irrespective of the items represented by the indication marks 8 is generated by the flat input device 4. Then, the process proceeds to ST7, and the above-described input signal is recognized as the coordinate data and the display panel 3 shows an updated screen in which the coordinate data is reflected.

[0052] The control unit 21 switches between the predetermined mode and the other mode by determining whether a finger or the like touches one of the input positions shown by the indication marks 8 for a predetermined time interval or the finger or the like moves before the predetermined time interval elapses. However, the predetermined mode and the other mode may also be switched manually by an input operation.

[0053] Although it is described above that the inversion plates 10 formed of dome-shaped metal plates are provided in the input apparatus 1 for generating a tactile feel for the operator, they may also be used for generating a switch input when they are inverted.

[0054] FIG. 7 shows an inversion plate which is constructed as a switching element 11 which is able to generate a switch input.